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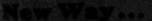
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Vitamin C intake of this order of magnitude prevents the development of clinical scurvy, however, it is probably inadequate for optimum nutrition. Clear cut cases of scurvy seldom are seen in this country although some authorities believe that symptoms of a mild deficiency of vitamin C are not uncommon (2).

Referring to nutritional deficiency diseases in general it has been said that, "Almost every tissue in the body may be affected by a deficiency in a food factor" (3).

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Thus it would appear that the optimum in-

take of vitamin C is at least twice the amount required to protect against scurvy.

Data recently published demonstrate that the vitamin C content of human milk is dependent upon the vitamin C content of the maternal diet (5).

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(1) 1934-35. Am. Pub. Health Assn. Year Book. Page 71 (2) 1933. Chemistry of Food and Nu-trition. H. C. Sherman. 4th Ed. Page 421 MacMillan, New York

(3) 1936. J. Am. Med. Assn. 106, 261 (4) 1934. Nature 134, 569 (5) 1936. J. Nutrition 11, 599

(6) 1936. League of Nations Report on Physiological Bases of Nutrition, League of Na-tions Publication Depart-ment, Geneva.

(7) a. 1925. Ind. Eng. Chem. 17, 69 b. 1928. Ibid. 20, 202 c. 1933. Ibid. 25, 682 (8) a. 1935. J. Nutrition 9, 667 b. 1936. Ibid. 11, 383 c. 1936. Ibid. 12, 405

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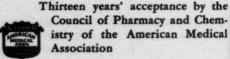
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Arch. Otolaryngology, Mar. 1936, Vol. 23, No. 3, 306-309

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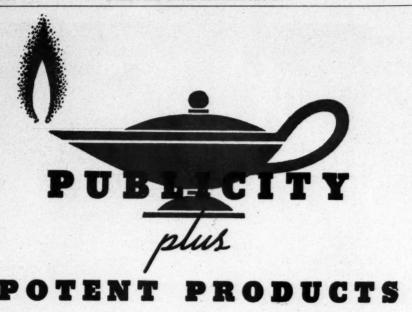
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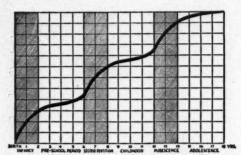
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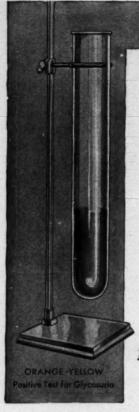


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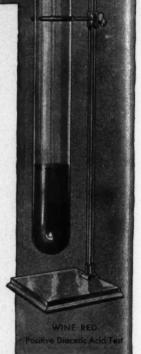


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## THE DIAGNOSIS AND MANAGEMENT OF GALL BLADDER DISEASE\*

T. GRIER MILLER, M. D.\*\*
Philadelphia, Pa.

Disease of the gall bladder constitutes the most frequent organic cause of digestive symptoms. In the better class of private patients the nervous or functional disturbances of the stomach and colon are more common, but in the total patient contacts of the average physician, including ward and dispensary cases and middle class private practice, no other disease so often produces the symptoms which we loosely term indigestion. In our own gastro-intestinal clinic, excluding the functional cases, 38 per cent of those with indigestion have cholecystitis; including the functional cases, 31 per cent.

The recognition of gall bladder disease, therefore, is of the utmost importance if we are properly to manage a large percentage of our patients with so-called indigestion. Fortunately, this usually is not difficult, though, due partly to a failure to appreciate its frequency, its presence is overlooked in a surprising number of cases.

Etiological considerations are not very helpful in the recognition of the disease, although a past history of typhoid fever or of a pregnancy should at least arouse one's suspicions. If, furthermore, the patient is stout and somewhat inactive physically and if such disease has occurred in other members of the family, one should at once consider the possibility of a gall bladder lesion. It is perhaps more important, however, to remember that gall bladder disease may occur at any age, may affect the male as well as the female sex and may occur without a history of jaundice

or of typical biliary colic. The most important thing is constantly, when confronting any patient with digestive symptoms, to have a suspicion of such a lesion.

What then are the phenomena that should arouse a suspicion of gall bladder disease?

First of all, vague symptoms of a digestive sort that are not easily explained on some obvious basis and that do not really respond to therapy directed along other lines. It is not probable, though possible of course, that the digestive symptoms that develop coincident with obvious circulatory decompensation or renal insufficiency or with the signs of pulmonary tuberculosis or after an acute emotional disturbance, are on a cholecystitis basis; nor is it probable, when abdominal pain has a food relationship characteristic of ulcer or is associated with evidences of a colon disturbance that the essential lesion involves the gall bladder. It is more probable that the symptoms then are due to those more obvious causes. When, however, such other lesions are not clearly indicated or when the symptoms do not respond to adequate treatment along other lines, gall bladder disease should be strongly suspected.

Once such a suspicion has developed, the history should be reviewed particularly with the thought of cholecystic disease in mind: Has the patient had typhoid fever? If a woman, has she had a pregnancy? Do fatty foods disagree? Has jaundice ever occurred? Do night attacks occur? Are gaseous eructations outstanding? Have other members of the family had gall bladder disease? Does motoring over a rough road or jarring of the body or other means precipitate an attack? Is the pain severe and cramp-like at times and is it ever referred to the right scapular region? Such questions as those, in a review of the history, even if covered before, may

<sup>\*</sup>Read before the Medical Society of Delaware, Rehoboth, October 13, 1936. \*\*Professor of Gastro-Enterology, University of Pennsyl-Tania.

bring out significant points that were not secured on the original interview. If so, and the new facts are indicative of gall bladder disease, that alone is a most important factor in the diagnosis.

Secondly, if, on physical examination, one finds localized tenderness or a mass under the right costal margin or jaundice, such an observation is of maximal importance in diagnosis. Localized tenderness, even excluding the acute cases and those with biliary colic, is in our experience very common. The absence of any physical sign, however, should not divert one's mind from the thought of gall bladder disease.

It is fair to say, I think, that at this point, without any facts other than those secured by questioning the patient and making a careful physical examination, one can, in a large percentage of cases, make a tentative diagnosis of gall bladder disease. It will be accurate in perhaps 60 to 85 per cent of the subsequently proved instances.

Whether the diagnosis now seems probable or is only suspected, one should undertake special studies for the purposes, in the first place, of attempting to confirm the diagnosis and, secondly, to rule out with greater certainty other diagnostic possibilities.

I shall not at this time go into the procedures indicated to rule out other disease conditions, but wish to refer merely to such lesions as chronic gastritis, appendicitis, gastric and duodenal ulcer, liver and pancreas affections, renal calculi and pyelitis, irritable colon, migraine and dyskinesia of Oddi's sphineter which are at times responsible for symptoms suggestive of gall bladder disease.

More particularly I wish to refer to biliary drainage and cholecystography, the two diagnostic procedures which have received most attention recently. At the same time I do not wish to minimize the importance of other procedures which long have been recognized as of great diagnostic value: inspection of the feces for an absence of bile, examination of the urine for biliary pigments, determination of the bile content of the blood serum (the Van den Bergh test) and roentgen study of the stomach and duodenum. Any of these diagnostic procedures, however, even

including biliary drainage and the Graham-Cole roentgenological test, if depended upon to the exclusion of other methods, especially history and physical examination, will give rise to an occasional error in diagnosis.

Dr. L. J. Rigney and I have been particularly interested in an investigation of the diagnostic value of biliary drainage and cholecystography in gall bladder disease. Over a period of several years we have studied carefully 112 cases that finally came to operation, so that in each we knew eventually the exact pathology. Furthermore, in every case we had secured before operation a satisfactory cholecystographic investigation, in most instances repeated studies.

We have divided the cases into two main groups: those with stones (83 cases) and those without stones (29 cases). In addition, we have selected from those two groups the cases with the strawberry type of gall bladder discase (11 cases, only one having stones).

Analysing the three groups on a percentage basis we have found that, for the gall stone cases, the history was suggestive of cholecystitis in 85 per cent, and characteristic physical findings (usually tenderness under the right costal margin) were demonstrable in 61 per cent, whereas less than 50 per cent had either calcium bilirubinate or cholesterin crystals, and only 38 per cent were reported as having stone shadows on cholecystographic investigation. At the same time many of the cases that showed no crystals or no stone shadows presented, by one or both methods, evidence interpreted as indicating an impaired concentrating power. Some of them, of course, had a blocked cystic duct, which prevented the entrance or exit of bile, others a completely functionless gall bladder wall. Under such circumstances one does not expect to find cholesterin stone shadows or to secure on drainage, at least in the instances of cystic duct obstruction, any bile whatever from the gall bladder. It is necessary, therefore, in evaluating the significance of these diagnostic procedures, to include evidence of lack of function. By so doing, 87 per cent of the stone cases gave x-ray evidence of disease; 91 per cent, drainage evidence of disease.

The percentage figures for the proved noncalculous cases are particularly interesting in that, on drainage, 38 per cent showed bilirubinate crystals and 13 per cent, cholesterin crystals, while 17 per cent showed, on x-ray examination, shadows suggestive of stones. In spite of these observations which tended falsely to indicate the presence of stones, evidence in favor of gall bladder disease of some kind was found in the history in 69 per cent, in the physical examination in 55 per cent, in the total drainage results in 79 per cent and in the roentgenological observations in 65 per cent. In only 2 cases were both the drainage and the radiological results negative.

The strawberry gall bladder group is small (11 cases), but it will be observed that the concentrating power was more often impaired in this than in either of the other groups (64 per cent and 55 per cent by the two methods respectively); that bilirubinate and cholesterin crystals were each found in 27 per cent of the cases, and that stone shadows were described in 20 per cent (stones present in 10 per cent). Taking into consideration all the data supplied by these two methods of study, 90 per cent showed evidence of disease by biliary drainage and 64 per cent by cholecystography. No case was entirely negative by both these special tests.

These observations clearly indicate that neither test can be depended upon for a differentiation of the two main types of chronic gall bladder disease, those with and those without stone, but at the same time that each is of the greatest value and that they are of about equal value in showing the presence of some pathology. In no stone case of our series were both tests entirely negative and in only two of the non-calculous cases were both negative. Incidentally in both of these cases extensive adhesions were present. It seems important, therefore, that both tests be employed in the study of suspected gall bladder disease. To what extent one or both methods may be in error in suggesting disease when it is not present cannot be determined on the basis of this investigation. When, however,

the history and physical signs are indicative of such disease and these tests are positive, the diagnosis would seem to be fully justified.

Again, however, I wish to emphasize the necessity in all obscure cases of ruling out the other possible explanations for the patient's symptoms: appendicitis, duodenal ulcer, colitis and pancreatitis especially.

Assuming that a definite diagnosis of gall bladder disease has been made, what is one to do about the case? This brings me to the subject of treatment.

I need say little about the acute cases. I have not thought it necessary here to discuss their diagnosis, which usually is an easy matter. If the symptoms are mild, as commonly occurs in the cholecystitis that accompanies typhoid fever, no particular therapy is indicated, though I believe that some fats in the diet may be helpful and possibly also the administration of urotropin. Those cases usually subside spontaneously. If, however, the systemic reaction is marked with fever, an increasing pulse rate, chills and sweats, and if localized pain, tenderness and rigidity are marked, irrespective of the presence of a mass or jaundice, surgical interference is indicated. That usually may be delayed for a few days, if progress is favorable, so that at operation a cholecystectomy may be accomplished; but sometimes it seems better and safer to operate at once, as in acute appendicitis, even if only to drain the gall bladder.

Our more frequent problem is to decide between medical and surgical treatment in the chronic cases.

Let us consider first those in which the evidence favors the presence of stones. Since 15 to 30 per cent of all adults are believed eventually to have gall stones, and many of them go through life without symptoms, it seems hardly justifiable to condemn to operation every individual in whom stones are accidentally discovered. If, however, symptoms explainable on the basis of the stones are present, and there are no contraindications to operation, I believe that their removal is clearly indicated. Medical management has little or nothing to offer.

When stones have not been demonstrated it is a more difficult matter to decide the

matter of therapy. The poor surgical results occur in this group, and, on the other hand, medical management sometimes is quite effective. My personal inclination is to give all these persons a trial on a medical program with the reservation that failure to bring about relief of symptoms within a few weeks or months or to explain the symptoms on some other basis is sufficient indication for surgery.

A proper medical regimen, in my opinion, includes the eradication of all focal infection; the avoidance of physical and nervous strains; rest periods to prevent fatigue, and a diet calculated to reduce weight, if excessive, to relieve the entire digestive tract of irritation and to drain the gall bladder. The latter is important and only recently has received the attention it deserves. In the past fats have been avoided or restricted on empiric grounds. Such avoidance of fats, however, brings about gall bladder stasis and perhaps tends to precipitate stones. For that reason it may temporarily relieve the patient's symptoms but eventually it is reasonable to suspect that it leads to a more serious condition. It seems wiser and more rational to keep the gall bladder active, to drain it frequently of its contents and so to bring about a more frequent filling and emptying with fresh liver bile. This fortunately can be accomplished by a diet high in its fat content. We are in the habit, however, of avoiding the fats high in cholesterol, giving instead olive oil before each meal. If on such a program colicky attacks develop, stones are usually present and operation is indicated.

Finally, I wish to refer to the use of urotropin in large doses (50 to 75 grams daily). Its administration has been urged in the belief that it liberates formaldehyde in the gall bladder and that this has an antiseptic action. Both experimental and clinical evidence of its effectiveness have been reported. Our experience is as yet limited but the clinical results reported by various authors, especially Hurst, seem to justify its use in suitable cases. It should not, however, be used in those cases for which surgical interference is clearly indicated.

Thus I have considered the diagnosis of gall bladder disease, emphasizing the importance of the patient's history and the physician's physical examination, and at the same time have attempted an evaluation of biliary drainage and cholecystography as laboratory aids in diagnosis. I have also considered the treatment, pointing out the indications, as I see them, for surgical interference and outlining a program of medical therapy.

I think if I may at this time I will throw on the screen a few tables and charts as I go along.

In our own clinic, analyzing some of our clinic patients, 1,258 of our clinic patients had these diseases: gall bladder disease, duodenal ulcer, functional gastric disturbances, functional colonic disturbances, duodenitis, stomach ulcers, chronic gastritis, stomach carcinoma and appendicitis. Of that total number, 308 had gall bladder disease. In other words, thirty-one per cent of the total group had the disease that commonly produces indigestion, had disease of the gall bladder. If we omit these functional cases it makes this percentage thirty-eight, or more than one-third of all the cases with gall bladder, and I think I can say proved gall bladder cases.

Taking all the admissions, not only to our out-patient clinic, but to our wards, there were 2,172 patients. You will see that there were 665, or about one-third, who had disease of the gall bladder, and there was no other disease, not even ulcer, which approached that figure. This is a different group, made up a different year, in our clinic, and included only 1,000 patients. Here again you will see that about one-third of all these diseases producing indigestion had gall bladder disease.

If you take private patients you will see immediately that the percentage drops down. In our case it dropped down to fourteen per cent, whereas the functional disturbances rose from twenty-two to forty-two per cent. So that there is a difference, depending on whether you are dealing with private patients or patients in a somewhat different status.

The recognition of gall bladder disease, therefore, if we are to properly manage our patients who have indigestion, is exceedingly important. I therefore want to discuss, in the first place, the various thoughts one ought to have about gall bladder patients, about patients with indigestion, in order to decide whether or not they have gall bladder disease.

In this next slide I have grouped the etiological factors and I do not think we need give much consideration to them in diagnosis, except that it, of course, is of decided importance if a patient states that she has had typhoid fever or if she has had a pregnancy, or he or she is diabetic. Those are factors in the etiology of gall bladder disease that certainly ought to be taken into consideration. It perhaps, also, is of some importance that the patient is a somewhat adipose individual, and particularly if the patient is somewhat sedentary in habits. But those things I do not want to emphasize, because it seems to me they are not nearly so important, for any type of person may have gall bladder disease, of any age, any sex, or any constitution.

So that while I throw that chart on the screen, I do not want to emphasize it, but rather to point out that from the etiologic point of view we do not know very much about why gall bladder symptoms happen, and we do not know when we are dealing with an individual case just what etiologic factors are significant. The main thing I wish to emphasize is the history and physical examination. At that point, before you have gone any further, I believe that in the great majority of cases you can make a diagnosis of gall bladder disease and be right. I believe that in seventy to eighty-five per cent of the cases you can make a tentative diagnosis of gall bladder disease and be correct, and those positive cases are later proved at operation.

So that the history and the physical examination are of tremendous importance, but in both instances one has to be meticulous in his investigation. It is necessary, however, to have more than the history and physical examination, because it is necessary and important to be correct in a lot more than seventy to eighty-five per cent of the diagnoses. So certain laboratory procedures are employed, and I believe those laboratory procedures are of importance in the order in which I have arranged them there. They—cholecystography and biliary drainage—taken to-

gether, certainly by all odds are most important and will most often help one to make a diagnosis, which cannot be made otherwise.

Gastro-intestinal x-ray study sometimes is helpful; tests for bilirubin in the blood; the Van den Bergh test is helpful. Of course, the more ordinary things, such as the inspection of feces for an absence of bile, or examination of the urine for bile pigments, go without saying, and those things usually appear late when jaundice is present, and it is hardly necessary to make the studies. In these here, I am thinking more about the obscure cases.

It is also important in considering the various tests that should be made to include those laboratory procedures which are of aid in eliminating other diseases that must be differentiated.

The next slide shows practically all our results in these cases. The black solid columns refer to those cases that had stones, and of the 112 cases there were eighty-three that had stones. The next column, the hatched column, refers to those patients who had chronic gall bladder disease, but no stones. There were twenty-nine of those cases. The third column with the transverse markings applies to the strawberry gall bladders. That group was made up from the first two groups.

We have studied these three groups on a percentage basis. In the first wide column you will see the black line running all the way into the lettering above. That indicates that all of those cases had stones at operation, of one hundred per cent. Of course, there were none of the non-calculus cases that had stones, and of the strawberry gall bladders there were only ten per cent that had stones.

Now we come to this column, which is suggestive history. The history was suggestive in about eighty-five per cent. I do not mean we could make the diagnosis on the basis of the history, but in eighty-five per cent of the patients who had stones the history, when it was re-analyzed subsequently, was very suggestive of gall bladder disease. I do not mean to say it was suggestive of stones; it was suggestive of gall bladder disease.

Now let us just follow the stone cases. The physical signs were suggestive of gall bladder disease in sixty per cent, so that the history and the physical signs were very helpful in that group of patients with gall stones. Now this data in these four columns applies to biliary drainage. B bile, as you know, is the concentrated bile that you secure from the gall bladder when the gall bladder is functioning in a normal way. Therefore, when there was no B bile that was an indication that something was wrong, either the cystic duct was blocked up and no bile could get out of the gall bladder, or such bile as got out of the gall bladder was not concentrated. So that there is evidence here that in more than fifty per cent of the gall bladder cases there was something wrong, so that no concentrated bile could be obtained.

B crystals mean calcium bilirubinate crystals. Naturally in the stone cases you would expect to find the crystals. However, in only forty per cent of the stone cases were calcium bilirubinate crystals found, and cholesterin crystals were found in less than that, about forty per cent, so that less than half of the patients with stones had either calcium bilirubinate crystals or cholesterin crystals. That is not as bad as you may think at first, because remember that if a patient had his cystic duct blocked no B bile got through, and therefore you had nothing in which to find crystals.

Furthermore, if the bile in the gall bladder did not concentrate, you might get some of this bile through and find no crystals in it, although it may be that only a small amount of that bile was emptied from the gall bladder, because of fibrosis of the wall, or incapability of squeezing out the entire content.

In any case, in evaluating the final significance of biliary drainage in the study of patients with stones you must add to these cases with crystals the cases which in addition had no concentration of the B bile. If you do that you find that the significance of biliary drainage runs up to almost ninety per cent. I am sorry I do not show that in this chart, but about ninety per cent of the patients with stones had some sort of evidence of gall bladder disease on biliary drainage.

Some of them showed crystals. Others of them showed an absence of B bile.

Then we come to the x-ray. Stone shadows, of course, are regarded as very, very important and unfortunately I think some x-ray men and clinicians think when they show a shadow in the gall bladder, a negative shadow particularly, that that is a pathognomic sign of gallstones. As a matter of fact about thirty per cent of our patients with stones had stone shadows. In addition to that, some fifty-odd per cent had evidence of lack of concentration. Some of these may have had cholesterin stones, but you could not see the stones because the dye did not get into the gall bladder, or if it got into the gall bladder it was not concentrated. Therefore, in those cases you would not expect to find stones. So that here again you must add together those cases showing impaired concentration and those patients showing stone shadows. By so doing you find about eightyseven per cent had x-ray evidence of this disease.

When you do that, therefore, the biliary drainage is helpful in the diagnosis of stone cases in ninety per cent, and the x-ray is helpful in the diagnosis of gallstones in eighty-seven per cent.

If that is clear, let us go back and discuss the patients with non-calculus cholecystitis. The history was suggestive in a fair percentage of cases, but not so high as you would expect in those with stones. The physical examination also in only about fifty-five per cent of the cases was positive, so that we can say the history and the physical examination will not in such a large percentage of cases lead to the diagnosis as in the case of stones.

When you come to biliary drainage, and this is the most interesting thing of all, you find that a certain percentage of these cases, about twenty-seven per cent, showed calcium bilirubinate crystals, although they had no stones. You find, furthermore, that about thirteen per cent had cholesterin crystals, although they had no stones and yet a great many people will tell you that you cannot find cholesterin crystals, except in stone cases, and if you get cholesterin crystals you can be sure you have stones. That certainly is

not true. It is particularly emphasized in literature that if you have both calcium bilirubinate and cholesterin crystals in the drainage material you can be sure of stones. We had those indications in about ten, or seven per cent of our cases, yet no stones were found at operation. So the point I want to make is that the presence of crystals in biliary drainage material is not an absolute evidence that stones are present.

If in dealing with the non-calculus cases you add all the data together, stones, lack of function, etc., then you find that about 75 to 80 per cent of those cases have evidence in the biliary drainage of their disease process. That is better than the history which you see is here at 70 per cent, and the physical findings down at 55. So that biliary drainage is a decided aid in the diagnosis of non-calculus gall bladder disease.

The same is true of x-ray. One would expect to find impairment of concentration in patients, whether they had stones or not, and you do find that about forty per cent of the non-calculus cases had evidence of lack of concentration. The more surprising thing is that some of the non-calculus cases had stone shadows by x-ray. Of course, maybe the x-ray people would say we thought they were shadows. We said they were suggestive. Be that as it may, the clinician is likely to take a suggestion from the x-ray man that he has found a shadow in his film that is indicative of stones, and add it to the history and physical findings, and drainage material, and say the patient has got stones 100 per cent, but there is a certain percentage, you see, that will show shadows which the x-ray men interpret as stones that do not have stones. So that both the biliary drainage and the x-ray are helpful in making a diagnosis of gall bladder disease. But in our opinion they are not very helpful in deciding whether the patient has stones or does not have stones.

The strawberry gall bladders you will see run quite parallel with the others. As a matter of fact, history and physical examination are more helpful in the strawberry gall bladders than they are in the ordinary non-calculus cases. So far as biliary drainage is concerned, more of them showed an impairment of concentration; not many showed crystals, although there were some calcium bilirubinate crystals, and there were a fair number that had cholesterin crystals. In the x-ray you will see that here, again, in the strawberry gall bladders there were stone shadows in about twenty per cent. As a matter of fact, one of those cases did have stones, and another did not. That represents only two

So that if you take this all together I think you will appreciate the whole point that I want to make today, namely, that these special tests, biliary drainage and cholecystography, are exceedingly important in making the diagnosis of gall bladder disease.

Some of you who are surgically inclined may be interested to know that about 80 to 85 per cent of all these cases had cholecystectomy. In other words, whether they had stones or they had merely non-calculus cholecystitis, or strawberry gall bladder, there is not any question in my mind that that is the proper therapeutic procedure in those cases.

I have discussed diagnosis and now I would like to just say a little bit about the treatment of gall bladder disease, if I may have the final slide.

It is hardly necessary for me to refer to the treatment of the acute gall bladder conditions. They are more easily recognized than the chronic ones, and they are surgical conditions rather than medical, usually because everyone knows that if you have merely some cholecystitis complicating typhoid fever there is nothing especially to do about it. It is perfectly justifiable to go along and treat the patient for the typhoid and perhaps make some local applications to make him more comfortable, but do nothing particularly about the gall bladder. Personally, I think a little urotropin is indicated in those cases because-but I wouldn't emphasize it-I do not think we have enough data as yet, but there is nothing particular to do about the mildly acute catarrhal cholangitis.

However, if one has an acute cholangitis with fever and increasing pulse rate and chills and leukocytosis, that is a surgical condition; we all appreciate that, and whether it is an immediate surgical condition, like acute appendicitis or whether one ought to wait for a few days in the hope the condition will subside, and that a complete operation may be done, a cholecystectomy, I do not know. I think the general opinion of surgeons is that it is better to wait a day or two at least, if the patient's progress is favorable, in order to do the cholecystectomy when they do operate, but certainly there are other cases which are much better to handle, cases with an acute appendix, even if only to drain the gall bladder.

The interesting part relates to the chronic cholecystitis, with or without stones.

#### DISCUSSION

Dr. R. W. Tomlinson (Wilmington): One of the reasons I wanted to come down to this meeting particularly was to hear from Dr. Miller's lips his ideas pertinent to this very topic. I had the privilege of hearing him talk several times as a post-graduate student at the University when I attended the Seminar of the Maloney Clinic. It seems to me that all of us in lesser communities which are not teaching centers in the practice of medicine are endeavoring to accord to our patients the meticulousness of the minutae of detail of which he speaks, which is going to augment the success with which we can treat this malcondition.

As he talked this afternoon I could not help but feel how propitious it might be could we have the boards which manage the finances, which have to manage the financial obligations of our several hospitals, have the opportunity of hearing the rendition from him of just the scope which has to be investigated as he portrayed it here graphically. Then probably they would be more in accord with the degree to which we went to effect a valid diagnosis before we remanded the case to our surgical confreres for final adjudication, not from the standpoint of braggadocio but simply from the standpoint of relationship. I experienced only the other afternoon in going over a case in the G. I. Clinic at the Wilmington General Hospital the fact that it took an hour and a half to elicit an adequate history and to perform as nearly a complete physical as I was capable of doing.

That is quite a demand on one man's time. If you have three or four patients you cannot possibly allocate that space of time to them. I do feel that he has brought out most emphatically, and I think that all concur in the expression of this thought, the necessity of the fact that all of us must evince a greater conscientiousness relative to the detail with which we view the patients that come in to us, either in the clinic or in our own office. Manifestly, we cannot accord to them this great disposition of time for the financial emolument which we accrue therefrom, but the general complexion of the attitude of the profession toward the diagnosing of malconditions which come to them for consideration I think has, in the main, greatly changed.

I think that they have greater concern about it and I believe that that thing is attributable to the emissaries of the dispensation of medical knowledge who are carrying the gospel of this sort of procedure just as Dr. Miller has done here today, and is doing continuously in the Maloney Clinic. I was interested in his statement relative to the finding of cholesterin crystals and calcium bilirubinate pigment because we usually felt when they were found that we had prima facie evidence of the existence of cholesterin. I think since I have been home I have had to concur with the sentiment expressed by Dr. Miller here this afternoon, because in one instance where the report had been rendered by the laboratory, and I had not done the drainage myself, at operation we found no cholesterin crystals, even from the scrapings of the gall bladder, and no calcium bilirubinate pigment.

It also seems that the matter of gall bladder drainage cannot be reposed with absolute safety in the hands of the untrained individual; that it is an art that is to be skillfully done, and the examination of the products received by drainage must be most meticulously searched for evidence of calcium bilirubinate and cholesterin crystals, and not give up too easily. So that I feel that I can thoroughly agree with Dr. Miller, who knows far more about it than I, that it is only by the summation of all the physical signs and the laboratory findings that we can eventually arrive at a valid and logical conclusion.

I want to thank you for the paper. It has been a privilege to hear it.

#### RESULTS OF GALL BLADDER EXAMINATIONS BY VARYING X-RAY TECHNIQUE \*

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My intention today is not to present an academic discussion of the anatomy, physiology, and pathology of the gall bladder, but rather to analyze and discuss briefly some of our observations in trying to reach a definite conclusion regarding the status of a given gall bladder by the oral administration of gall bladder dye.

In the days preceding the introduction of the dye by Graham and Cole some fifteen years ago, we depended entirely on the plain film examination for detection of gall stones, and only those gall stones which contained sufficient calcium were we able to visualize. These calcium containing calculi constituted a very small group, as compared to the large group of cholesterol or soft stone and another thing we could give no opinion whatever about the function of the gall bladder.

Today we are able, not only to visualize the cholesterol or soft stones as well as those containing calcium, but at the same time we are able to give a very good estimate of the degree of function of this very important organ.

When this method of visualizing the gall bladder was first used by roentgenologists, the question naturally arose as to the method of choice. Should it be given intravenously, or should it be given orally, and for some years the controversy raged. Each method had its advocates, and the advocates of the intravenous method would extol its advantages and virtues and point out the fallacies and pitfalls of the oral method. Those who advocated the oral method claimed the intravenous method was more trouble and more dangerous than the oral method, with little or no increase in accuracy.

A little later, a variation of both methods were tried. Namely, when the first dose of dye did not visualize the gall bladder a repeated dose was given either orally or intravenously. This was done in two hundred cases by Kirklin, of the Mayo Clinic. He took one

group of one hundred patients and repeated the dose intravenously and in the other group he repeated the dye orally. On the rechecks he found the intravenous method to be only about 1 per cent more accurate than the oral, which is a negligible advantage.

At the present time most roentgenologists use the oral method, and we are varying this method in different ways with increasingly accurate results. The essential variations are the divided or repeated method.

Sandstrom originated the divided dose technique in which several small doses were given over a period of several days with the idea of supercharging the liver with the dye for its elimination into the gall bladder. Then Whittaker and Ellsworth found that the gall bladder could be prevented from emptying, without the necessity of fasting, by giving carbohydrates and withholding fats. Later Stewart and Illick, of New York, announced their intensified technique in which two bottles of dye were given on the same day and repeating that with a dose on the third day if the gall bladder did not visualize. They were able to show gall stones by this intensified method which they were not able to show on a single dose. Unfortunately, they do not give their percentage of increased accuracy in the visualization of gall stones. Jenkinson, of Chicago, recently published an article in the J. A. M. A. in which he advocates an interval of a month before re-examination, and in the interval the patient is given foods rich in fats, the purpose being to empty the gall bladder frequently. He has been able to show normal responses on the repeated examination, when the original examination was inconclusive.

Our method is to start at noon the day before the examination with a fatty meal, the idea being to empty the gall bladder. Then nothing is allowed except water until a 6 o'clock dinner, at which time a fat-free meal is given, immediately followed by the bottle of dye. Two teaspoonfuls of paregoric are given to prevent or lessen the laxative effect of the dye. The following morning films are made fourteen hours and sixteen hours after ingestion of the dye, and if neither of these films show satisfactory shadows the examina-

<sup>\*</sup>Read before the Medical Society of Delaware, Rehoboth, October 13, 1936. \*\*Roentgenologist, Homeopathic Hospital, Wilmington.

tion is stopped, the patient kept on a fat-free diet and given a second bottle of dye the second night, with films the following morning, making it forty hours after the injection of the original bottle of dye, and I shall show you the extra effort has been well worth while.

The analysis of our cases is as follows:

This analysis represents a hundred and forty consecutive cases examined. Of these, forty-eight patients gave a normal response on the original examination. Twelve patients showed no visualization on the original, with normal gall bladder shadows on repeated examination, and four showed a poor visualization on the original, not sufficient to come to any definite conclusion, and on repeats showed normal shadows. This makes a total of sixteen cases out of the one hundred and forty, or approximately 11 per cent, which we were able to place in the normal column and which if we had passed an opinion on the original examination we would have had to place them in the group of pathologic responses. This would have, in all probability, subjected the patient to a needless operation, because the surgeon took our word for it. that the patient had a surgical gall bladder. Twenty-three cases showed a slight subnormal shadow or did not empty quite normally, so these were classified as Grade I cholecystitis. Appreciating the fact that other roentgenologists might classify some of these as within normal limits I am adding these twenty-three cases to the sixty-four which visualized normally on the original or repeated examination, which gives us a total of eighty-seven cases which showed a normal or near normal response. These eighty-seven cases represent approximately 60 per cent of all cases examined, and all these patients gave clinical symptoms simulating gall bladder disease. I think the lesson to be drawn from the analysis of this group of cases is. first, we should exhaust every means toward an accurate diagnosis, even in the face of fairly positive, clinical symptoms of gall bladder disease, before operation is considered. Secondly, that we roentgenologists should repeat our examination when the first one is inconclusive, because as I have shown, if the

repeated examination had not been done in our series of cases, there would have been an error of 11 per cent of the total cases done, and an error of nearly 20 per cent in the cases that were eventually determined to be either normal or at most a Grade I cholecystitis, at least we have saved that much needless surgery when the surgeon depends on our findings.

#### PATHOLOGIC GALL BLADDERS

So far I have attempted to analyze the cases in which we were able to rule out gall bladder disease, as far as the need for surgery goes, and now we shall analyze the cases in which we made a definite diagnosis of pathologic gall bladder and the operative findings. There were fifty-three cases which we positively diagnosed as pathologic. This diagnosis was based on three things: first, we were able to visualize, within the gall bladder shadow, gall stones on the original examination in twelve cases out of the fifty-three, or a little over 20 per cent. Secondly, by repeating the examination we were able to show gall stones in another eight cases, making 20 cases or thirty-seven per cent of the total of 53. This gave us an increased accuracy of showing gall stones of 17 per cent by the repeated method over and above the results in the original examination, or in other words we almost doubled the number of cases in which we were able to show gall stones on the repeated examination which we were not able to show on the original. To put it another way, only one-half of the gall stones which it is possible to show were visualized on the first examination. Thirdly, there was a group of thirty-three patients whose gall bladders did not visualize either on the original or repeated examination. We made the diagnosis of gall bladder disease with gall stones based on the premise that any gall bladder having sufficient pathology not to produce a shadow of some degree of density on two bottles of dye was damaged badly, enough to have gall stones, and the operative results have substantiated this reasoning, after cardiac decompensation, malignancy and diabetes have been ruled out. There have been thirty-one cases out of the fifty-three operated upon and thirty of them had calculi in the gall bladder.

In one we made a diagnosis of chronic cholecystitis alone, and she proved to have one calculus in the ampulla of the gall bladder, so that the operative findings confirmed our roentgen diagnosis as being correct in thirty out of the thirty-one cases, or 96 7/10 per cent. The repeated dose method, I feel, has done two things: first it has very materially reduced the number of gall bladders removed and classified cholecystitis, Grade I, or a gall bladder with very minor mucosal changes and which could have been better treated by medical means; and secondly, it has enabled us to increase our visualization of gall stones by 17 per cent.

DR. IRA BURNS (Wilmington): Mr. Chairman, I only want to emphasize the fact of repeating the examinations of these patients when they are negative, or for some other reason, but particularly when they are negative. I have found that by not giving these patients any food whatsoever on the x-ray night, that is, the night following the original dose of dye, repeat the same dose of dye and the next day very frequently the gall bladder will appear. I want to emphasize the fact that repeated cholecystography is really worth while.

#### PRELIMINARY OBSERVATIONS ON THE CLINICAL USE OF ZINC-PROTAMINE-INSULIN IN OUT-PATIENTS

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Medical literature during 1936 contains numerous articles on various modifications of insulin. In the early days of insulin therapy in 1922 the product then available caused some unpleasant local reactions upon injection. Subsequent refinement has largely done away with these reactions but with the result that insulin is absorbed rapidly, exerts its effect promptly and permits the blood sugar level to rise again after 3 or 4 hours. With

In August, 1935, Hagedorn<sup>1</sup> and his associates in Copenhagen discovered that a monoprotamine derived from fish sperm was effective in this manner when combined with ordinary commercial insulin. Their first publication appeared in the J. A. M. A. January 18, 1936, coincident with a corroborating article by Root, White, Marble and Stotz2, using material furnished by Hagedorn. This material is called protamine insulin; is an aqueous turbid liquid, insoluble at a Ph of 7.3 and when injected in such a suspension the insulin is released gradually. These reports were most encouraging. The decrease in fluctuation of the blood sugar level is illustrated by the curves in figures 1 and 2.

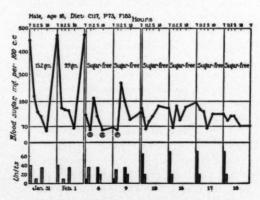


Fig. 1. Poor control of glycemic level in a case with insulin used in multiple doses compared to satisfactory control, with a single dose of insulin protamine compound supplemented with a small dose of regular insulin. (After Wilder).

ordinary insulin therapy therefore we have been attempting to replace a relatively constant deficiency of endogenous insulin with periodic injections of relatively large amounts of exogenous insulin. In most cases the results are quite satisfactory. In many, however, distressing hypoglycemic reactions occur or it is necessary to inject insulin too frequently in order to control the disease. A preparation which is more prolonged in its action, which requires fewer injections, and causes less fluctuation in the blood sugar level is, therefore, most desirable.

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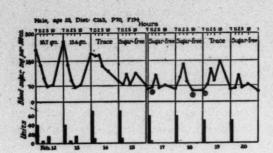


Fig. 2. Satisfactory control of glycemic level with single doses of insulin protamine compound given before breakfast. (After Wilder).

These curves are taken from a comprehensive article by Wilder<sup>3</sup> and his associates appearing as early as May, 1936. At that time it was thought unwise to inject both insulins at the same time or at the same site. At present to do this is not objectionable. Wilder found that in many initial cases insulin P could completely replace insulin R. Usually, however, insulin R was given in the morning and insulin P in the evening. Wilder also pointed out that for some, as yet, unexplained reason a patient sugar-free on insulin P may suddenly develop glycosuria for 2 or 3 days without apparently affecting his well being and which will correct itself without change in diet or insulin dosage.

There was some preliminary difficulty with the stability of the product. Another form of insulin, called crystalline insulin, prepared by extraction from the pancreas was compared favorably with protamine insulin by Freund and Adler' in J. A. M. A. in August, 1936. Some of the practical advantages of crystalline insulin have been met by more recent preparations of the protamine insulin by the addition of zinc. Scott<sup>5</sup> 6 at the University of Toronto, called attention to the fact that zinc, although found in almost every tissue of animals, is found in especially large amounts in the pancreas. He also found that zinc was present in crystalline insulin and that it was probably not an impurity but chemically bound. Scott and Fisher then discovered that zinc combined readily with protamine. Rabinowitch<sup>s</sup> and his associates discussed at some length their carefully controlled clinical experiments with zinc-protamine-insulin at the Montreal General Hospital in the September number of the Canadian Medical Association Journal. Their conclusions were that the zinc modification was a distinct improvement upon Hagedorn's product. Zinc itself is known to be non-toxic.

In November, in Colorado Medicine, Waring, Longwell and Ravino gave a detailed resume of the literature on this subject, including the chemistry, experimental work and clinical trial. Joslin10 previously had endorsed protamine insulin. Allen11 pointed out some difficulties in using it in severe diabetes. His objections have been answered to some extent at least by the zinc modification. Bennett and Gill12 called attention to the particular advantage of "Insulin Retard" in juvenile diabetes where the sugar balance is characteristically erratic. Finally, Harrop<sup>13</sup> in a paper before the Southern Medical Association in Baltimore in November gave further clinical evidence that zinc-protamine-insulin is safe to use and can, if desirable, be given in the same syringe with regular insulin. Its effect is prolonged on the average 24 hours. The main disadvantages are: (1) when hypoglycemic reactions do occur they are less sudden but more prolonged; (2) it is less efficacious than regular insulin in the control of acidosis and coma, because of the slowness of its action.

The numerous reports referred to above have in most part been based upon carefully controlled hospital cases in metabolic wards where frequent blood sugar and cholesterol estimations and other laboratory examinations could be accurately made. After such investigation, the final criterion of the usefulness of any new therapeutic agent is its practical use in out-patient clinics and in private practice. Therefore since one of the manufacturers\* of zinc - protamine - insulin kindly made available a supply of this material I report here the results of three months' experience in the treatment of seven clinic and eight private patients. Charts 1 and 2 show the known duration of the disease in each case, the length of time of previous observation, the insulin dosage, urinary findings, blood sugar readings before and after the administration of the protamine insulin.

<sup>\*</sup>The zinc-protamine-insulin used was very kindly furnished by E. R. Squibb and Son.

The diet was kept constant except in case IV where it was necessary to increase it because of the marked improvement in the diabetes under the new insulin. In this case insulin R had been given previously in 3 doses totalling 60 units: 30 units of insulin P sufficed in one morning dose. The carbohydrate was distributed by giving 1/5 at breakfast and 2/5 at each of the other two meals. The majority of cases were seen only once a week. Frequent blood sugar determinations were im-Treatment was, therefore, quite practical. conservative. As a rule both regular and protamine insulins were given in the same syringe in one injection. In cases 1, 3, 4, 5 and 7 the regular insulin was stopped entirely. Case 2 was a severe diabetic, a colored boy of 17, who co-operated poorly. He did well for a while but during the Christmas holidays broke diet and refused insulin and later was hospitalized. Case 3 had had several

severe insulin reactions previously. Insulin P therefore worked ideally in this case. Case 8 could not be controlled with one morning injection but with insulin R, units 15 and insulin P, units 35 before supper the urine showed only an occasional trace of sugar and. so far, hypoglycemic reactions have been absent. This child has, therefore, been able to attend school with practically no fear of reactions. Case 9 is a severe diabetic of 10 years duration in a girl of 15 years. It was not possible to give her sufficient insulin to control her diabetes without frequent hypoglycemic reactions until insulin P was used. Her ravenous appetite is now controlled and she is co-operating for the first time in ten years. Case 14 had such a severe insulin reaction on the old insulin that he was rushed to a hospital in coma one night. With the new insulin danger of such reactions in the future will be eliminated and the carbohydrate intake has also been increased.

INSULIN—R									INSULIN—P									
Case	Age	Col. Sex	Known Dur. Disease	Time	Diet	Insulin-R	Glycosuria	Blood Sugar	Insulin-P	Glycosuria	Blood Sugar							
No. 1 R. M. 165 Lbs.	60	C. F.	4 Years	3 Years	C. P. F. 90 50 40	25-0-20	3+ P. M.		10-0-0	2 \(\psi \) P.M. Otherwise Free		Diet later increased						
No. 2	No. 2	. C.	. 18	18	C. P. F.	25-0-20	3-4 +		R-20 } A.M.	only once in 24								
N. J. 120 Lbs. 17	M. Mos.	Mos.	120 60 60		most specimens		R-20 P-25 P.M.	complete reduction		Xmas Holidays								
No. 3		C.	1	1	C. P. F.	None previous large doses	941		20 } A W	Sugar	1	Pulm. TBC.						
111 Lbs.	B. F. 39	M.	Year	Year	125 60 90	insulin shock	3-4 +		A.M.	10 P.M. only		pneumothor						
No. 4		35 W. M.		w	w	w	w	w	8	6	C. P. F.				20.)			
A. A. 122 Lbs.	35			1	Mos.	110 70 60 130 70 70	Free 216	216	30 } A.M.	Free		Feels well						
No. 5		C.	6	3	C. P. F.	10-5-10	Occasional	296	15)	Occasional slight reduction		2 Toes Amputated— gangrene						
C. D. 135 Lbs.	50	50 F.	Years	Years	110 55 70		slight reduction	296	15 A.M.									
No. 6 R. C. 207 Lbs.	49	C. F.	4 Years	2 Years	C. P. F. 100 50 50 cooperates poorly	15-0-5 Susceptible to reactions	1-2 4- every specimen		R-15 A.M.	Occasional		Slight peripheral vascular disease						
No. 7 J. C. 141 Lbs.	74	W. M.	6 Years	3 Mos.	C. P. F. 110 65 60 120 70 70	20-0-0 Insulin reaction in A. M.	Р. М.	1 :	10 } P.M.	Free								

CHART I. OUT-PATIENTS TREATED IN THE METABOLIC CLINIC OF THE DELAWARE HOSPITAL

INSULIN—R									INSULIN—P				
Case	Age	Sex	Dur. Disease	Time Treated	Diet	Insulin	Glycosuria	Blood Sugar	Insulin	Glycosuria	Blood		
No. 8 V. K. 85 Lbs.	13	F.	8½ Years	8 Years	C. P. F. 195 60 50 steals	26-0-20	1-2-3 + Occasional	130	R-15 } P.M.	Free			
No. 9 C. B. 94 Lbs.	15	F.	10 Years	10 Years	C. P. F. 140 60 70 steals	32-0-23	4 +	250	R-30 } A.M. R-10 } P.M. P-20 }	Only Occasional		No shocks Feels well Good on Insulin-P	
No. 10 M. G. 120 Lbs.	25	P	12 Years	9 Years	C. P. F. 185 70 90	22-0-12	Free	120	R-15 } A.M.	Free		Severe diabetes Good cooperation	
N. 11 W. F. 142 Lbs.	18	М.	4½ Years	4½ Years	O. P. F. 150 60 75	40-0-40	Occasional 4 +		R-30 } A.M.	Free		Feels fine	
No. 12 L. C. F.	25	М.	7 Years	2 Mos.	C. P. F. 140 70 60	12-0-15	Occasional		R-5 } A.M.	Free	148		
No. 13 E. C. 145 Lbs.	42	F.	4 Years	4 Years	C. P. F. 145 80 135	35-0-25	Occasional 1	110 P. M.	R-15 } A.M.	Free		Feels well Has old pulm. TBC.	
No. 14 E. R. 117 Lbs.	46	м.	10 Years	5 Years	C. P. F. 75 86 128	17-0-12	Occasional 1 +	F. 210 to 100	R-17 } P-10 } A.M.	Free	5.66	Had one bad hypoglycemic reaction on Insulin-R.	
No. 15 A. S. 140 Lbs.	78	F.	9 Years	3 Years	Diet not calculated	16-0-0	2-3 +		P-16	Free	19		

#### CHART II. PRIVATE PATIENTS TREATED OUTSIDE OF A HOSPITAL

#### CONCLUSIONS

- 1. 15 out-patients have been treated over a period of three months with zinc-protamineinsulin either alone or combined with regular insulin.
- 2. This insulin apparently preserves a more constant carbohydrate balance which is less easily disturbed by breaks in diet.
  - Fewer injections were necessary.
- 4. The total insulin dosage was decreased in most cases.
- 5. The product was found to be safe and was pleasing to the patients.
- 6. Further observation and careful clinical trial of zinc-protamine-insulin is advisable.

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## EDITORIAL

#### DELAWARE STATE MEDICAL JOURNAL

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#### THE TREND TOWARDS INSURANCE

There seems to be ever-increasing activity in this agitation for compulsory health insurance. Keeping pace with these maneuvers on the part of its proponents is an almost constant stream of articles, papers, and editorials from its opponents. The medical profession, having perhaps at stake its very existence as an independent profession, has naturally taken the lead in the opposition: the national journal devotes a special section to the whole subject of medical economics, and the state journals carry in almost every issue some article or editorial on this subpect.

These editorials, etc., are not political; there is certainly no politics in battling for

the preservation of your profession. We take it that all thinking physicians hold to the thesis that no system of medical practice yet evolved equals private practice. Certainly, no system of governmental compulsory insurance yet devised abroad has done so much for the public welfare as has been accomplished by the American system of private practice. To maintain that private practice upon the high level it now occupies and to carry it on to further heights means that every effort must be expended to thwart the saddling upon the public and the profession of a system borrowed from a foreign country, of a frankly political nature; and it goes without saying that the American doctor abhors the very idea of a political boss over his practice, be that boss Democrat, Republican, or whatnot. No; these efforts are not political; they reach down to the very fundamentals of medical economics and practice.

Of the recent editorials, the following, from the Journal of the Missouri State Medical Association, for March, 1937, is among the most temperate and philosophical: it is well worth reading.

#### THE PHYSICIAN AND THE COORDINATION OF GOVERNMENTAL HEALTH AGENCIES

Through multifarious bureaus, committees and commissions the government of the United States is attempting the reorganization of the American manner of life. It envisages a duty to insure the individual against the hazards of economic cycles, against the insecurity of old age, and possibly against the unpredictable wraith of illness. Whether pampering destruction of that rugged individualism that has marked the growth of the nation is wise is a matter of debate. Certainly, argument can be brought to support either point of view. The machine age has made the man less important; he has been relegated to the position of a cog, an unimportant, easily replaceable cog that operates the machine and is controlled by it. Hitherto, only welfare workers have been concerned with man as an individual. Now Big Government becomes aware of him. It numbers him, labels him and, willy nilly, will make his life secure, happy, fruitful.

That at least is the theory of the sociologists, the professors and the reformers. Their philosophy is based upon a sentimental reaction to the fancied rights of man without regard to the question, has man by his own merit earned the privileges which we are about to bestow? Certainly, if man has earned these privileges there can be no question that they should be given him. If he is ready for them, if he

will utilize them to his own and to the Nation's advantage, if the conglomerate body of thinkers can show that he will not disregard or pervert these privileges, then they should be given.

As physicians we can have no quarrel with the reformers who seek to insure against economic cycles and old age. Perhaps as citizens we may make articulate our doubt that these grandiose concepts will translate themselves into the cold reality of being. Our own intimate contact with the folk whom government seeks to insure may cause us to look askance at some of these schemes. For we are practical men, not philosophers awestruck at the scintillating brilliance of the sentimentalists who write books on sociology.

Being practical men it behooves us to make known our opposition to certain of the reforms now being hatched to the end that there may be no sickness, or, should the scheme break down and illness actually occur, that physicians will be paid by the government to care for whoever may demand attention. Change is inevitable. A modest amount of reform is desirable. But the reform should take the direction of coordinating the widespread governmental agencies that have to do with disease.

We have no quarrel with the concept which holds that health is the first function of government. That is, health in its broadest aspects. We believe that government should coordinate all health activities into one agency under the directorship of a physician who has had actual contact with the sickbed and who combines the requisite executive ability with this large degree of practical personal experience. We believe that this physician should be empowered to collect statistics relative to morbidity and mortality, to issue regulations relative to the control of communicable disease, to direct campaigns toward the eradication of maternal and infant mortality, to prosecute the treatment of venereal disease, to inform the public relative to community health matters; in short, we believe that this physician, the director of a newly-created department of government coordinating all of the now separated agencies dealing with the public health, should have the powers necessary to enable him to deal broadly with the national problem of physical well-being and longevity.

The more intimate problem of individual well-being, however, must remain in the hands of the individual practitioners of medicine, men freely chosen by the sick person, responsible only to them, receiving remuneration only from them. It is of the most urgent importance that individual members of the Missouri State Medical Association make their convictions known to their representatives in the National government. The Missouri State Medical Association is anxious for reform of the present unsystematized governmental health agencies. It will welcome their coordination under the aegis of a properly qualified physician. It will cooperate with him in every effort to improve the standard of the National health. But it will not tolerate any attempt to trespass upon the inherent privilege of an individual patient to choose his own physician. It will not brook interference with his confidential relationship to that patient and his family. It stands unalterably opposed to the inclusion of any plan which might make the individual physician an employee of the government, which might make the individual patient a ward of the government.

The theoretical sociologists must be made to understand the unpredictable vagaries of the human mind which preclude their attempts at paternalistic reorganization of the whole of medical practice. Let them confine their efforts to the field of government, that branch of human activity which has for its sole function the solution of problems arising in the mass

relationships of individuals. Let government steer, chart the course; let the physician continue a free agent. Let him not be relegated to the position of a cog in a cumbersome, unwieldy, bureaucratic machine grinding out health, unimportant to his patient and to himself, easily replaced by another government minion.

#### **MISCELLANEOUS**

#### What Happens to Medical Fees For Saving The Injured

In the city of New York thousands of doctors draw very considerable fees from accident cases. These fees do not always come from the injured person, but oftener from the insurance companies. They are not always paid willingly or entirely and are frequently subject to adjustment. Nearly 2,000 of such fees are in controversy in the city of New York, entailing a delay for the doctor in obtaining remuneration and for the insurance company in clearing its record.

But New York state is trying a new experiment for adjusting such fees equitably and expeditiously.

Inspired by the voluntary arbitration system of the National Bureau of Casualty and Surety Underwriters, the amendments to the New York Workmen's Compensation Act passed in 1935 contain a provision for the arbitration of disputes on medical fees.

Compensation Insurance Board, in conference with officials of the Labor Department and the American Arbitration Association has worked out an administrative plan for making this provision effective. Under this plan the Insurance Carrier files an Objection with the Industrial Commission, with which is also filed an agreement to arbitrate and to abide by the award which is signed by both parties to the dispute. The Rating Board then arranges for a hearing before four arbitrators, two appointed by each side from special panels of doctors that have been appointed for the purpose through the cooperation of the County Medical Societies. When the four arbitrators fail to agree on a decision they select a fifth doctor whose decision then becomes final. It is anticipated that the question arbitrated will involve not only the size of the doctor's fees. but also his competency and his disposition to follow ethical standards.

The Arbitration Journal for January tells

the story of this experiment, describes the law under which it is being made and the machinery for making such adjustments. The story is part of a Symposium on Arbitration in Insurance which portrays the whole picture of what the insurance companies and arbitration are doing to meet the problems which arise after an accident has occurred.

## Phenolphthalein Studies: Thousand Doses of Phenolphthalein: Urinalyses

In order to question whether phenolphthalein produces albuminuria or damages the kidney in any way Bernard Fantus and J. M. Dyniewicz, Chicago (Journal A. M. A., Feb. 6, 1937), made a study of a 1,000 medicinal doses of phenolphthalein, with special scrutiny of the effect on the urine. The specimens of urine were obtained from male medical students at the University of Illinois College of Medicine and from male patients at the Cook County Hospital. The free phenolphthalein in the urine, conjugated phenolphthalein in the urine and the acidity of the urine by the Folin method were determined. Of 650 observations on normal persons no albuminuria resulted from medical doses of phenolphthalein. In 150 hospital patients who had no albuminuria before the administration of phenolphthalein in doses of from 0.1 to 0.5 Gm. there was not a single case of albuminuria. Of a series of forty-four patients who had albuminuria before the administration of phenolphthalein, in no instance was there any evidence of increase in the albuminuria or microscopic evidence of change in the urinary sediment excepting in one case. Free phenolphthalein was found in only 8.5 per cent of the urines of medical students and in 21.5 per cent of the urines of the Cook County Hospital patients. This is probably due to the following two facts: 1. The larger the dose the more frequently does free phenolphthalein appear in the urine. A larger proportion of the Cook County Hospital patients than of the medical students received 0.3 Gm. doses of phenolphthalein. 2. Bacterial decomposition of the urine liberates phenolphthalein from its conjugated form. Many of the Cook County Hospital specimens were over twenty-four hours old and without preservative. Conjugated phenolphthalein was found in every urine specimen examined. In other words, one can tell, by the presence or absence of conjugated phenolphthalein in the urine, whether a person has taken phenolphthalein or not. The quantity of conjugated phenolphthalein when free phenolphthalein was also present was always greater (with a few exceptions) than that of free phenolphthalein. The larger the dose, the greater the average amount of conjugated phenolphthalein eliminated.

#### Transitory Hyperglycemia and Glycosuria In Acute Coronary Occlusion

Ken W. Blake, Los Angeles (Journal A. M. A., Feb. 6, 1937), reports his case of transitory hyperglycemia and glycosuria occurring in a patient with acute coronary occlusion for the purpose of emphasizing one of the frequent clinical features of acute coronary occlusion that is often misinterpreted and mistreated-transitory hyperglycemia and glycosuria. It is misinterpreted because the condition is apt to be confused with true diabetes mellitus and mistreated because insulin is often employed in such doses that the blood sugar is rapidly lowered, thereby leading to serious faults in conduction, namely, extrasystoles, auricular fibrillation and bundle branch block, to acute congestive failure or frequently to death. That a high level of blood sugar is not deleterious but rather advantageous to the cardiac patient, particularly in the anginal type of cardiac distress, has been the clinical experience of many. As to the cause of the rise in the blood sugar, no one can at this time definitely say, although many theories have been advanced. Whether it is a physiologic or a pathologic response has not been determined. The analogous occurrence of hyperglycemia and glycosuria in patients suffering with circulatory shock following cerebral hemorrhage, embolism and thrombosis may aid in the future in solving this problem. What is known, however, is that in a certain percentage of patients suffering with acute coronary occlusion such a phenomenon does occur and that when it is seen one must remember that it does not necessarily indicate any true diabetic state, that it will usually subside of its own accord, and that the employment of insulin is usually not necessary.

#### **BOOK REVIEWS**

The Professional Success Survey. Conducted and reported by George N. Danforth. Pp. 214. Price \$10.00. Boston: Danforth-Hughes Associates, 1936.

The publisher states that this is not a book but a compilation of ideas. This statement is literally true, the offering consisting of mimeographed pages of letter size, bound with heavy board covers. The ideas compiled deal with the general methods of building or enlarging a professional practice by sound, ethical and specific methods. The work proceeds on this thesis, to which we agree, that six fundamental factors are involved in professional success-knowledge, personality, contacts, leadership, "breaks" and size of community. This leads to the "Danforth formula" of K x P x C x L x B ÷ S=Annual income, in which, K. P., etc., are given certain numerical values. In an experimental analysis, this reviewer found the answer too low, though he may have been a bit too selfcritical in rating his own K. P. etc. publisher states, however, that this formula is approximately correct.

To us, the most interesting and valuable parts of the work are the discussions on people's likes and dislikes, physical vigor, etc., and introverts and extroverts, which contain much valuable material.

About one-half of the space is devoted to case histories, which illustrate the principles declared in the fore-part of the compilation. Many valuable pointers can be derived from this section. There is also a supplement devoted to various techniques.

Whether we agree or not with any attempt to evaluate mathematically the various factors of success or failure involved in a professional career, it seems to us that the present Survey makes a definite contribution to the subject, and could with profit be used as a reference book in the medical schools in their courses on medical economics. With this in mind, we would recommend a printed edition of small and compact size, and lower price. The work should be read by all practitioners who feel that they are not making

the most of themselves—it is really a thought provoking survey.

Medical Morals and Manners. By Hubert A. Royster, M. D., Professor of Surgery, Wake Forrest College. Pp. 333. Cloth. Price, \$2.50. Chapel Hill: University of North Carolina Press, 1937.

Dr. Royster is a most scholarly writer. This book, which is a collection of essays and papers delivered over a period of forty years, is conclusive proof of our opening statement. The material is averaged in five parts—medicine as a profession; athletics; surgical papers; hospitals; and biographies. The range of subjects is very broad, as would be expected of such an educated and cultured writer. A review of the thirty papers is not in order here; suffice it to say that this volume will delight the physician who craves something out of the ordinary, something stimulating, and withal, something very practical.

The Intimate Side of a Woman's Life. By Leona W. Chalmers. Pp. 128, with 22 illustrations. Cloth. Price, \$1.50. New York: Pioneer Publications, Inc., 1937.

This little manual, written by a doctor's wife for the laity, deals with the general subject of feminine cleanliness, and includes chapters on the anatomy and physiology of the female pelvic organs, displacements, menstruation, leucorrhea, vaginal and general body hygiene, and marital relations. The text is well written, and is in line with modern concepts. The book can be recommended by the physician: the patient will profit by the recommendation.

The Technique of the Love-Act. By Douglas MacDougall, M. D. Pp. 63. With a cabinet of 18 illustrations. Cloth. Price, \$3.50. New York: Medical Press, 1937.

This little handbook, sold to physicians only, is sufficiently described in the title. It is presumed that the physician will hand it to the proper patients, for whom it is purposely written in non-technical language. There may be, in some quarters, a need for such a work, in which case this book will be found to be sufficient. The numerous typographical errors should be corrected in a future edition.

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Censors: L. L. Fitchet, Felton; Stanley Worden, Dover; N. R. Wash-burn, Milford.

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Meets the First Thursday

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Alternates: Bruce Barnes, Howard Lecates, K. J. Hocker. Censors: K. J. Hocker, U. W. Hocker, W. T. Jones.

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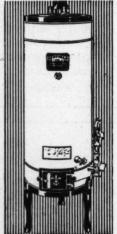
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